Living Conditions of University Students and Effective Factors

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ABSTRACT

Japanese society is currently facing a housing problem termed "Gomiyashiki" in Japanese. The problem consists of houses being filled with garbage. It is mandatoryfor all students in Japan to receive home economics education at least for six years, starting from the 5th grade. Through such compulsoryhome economics education, students acquirethe knowledge and skills for making a comfortable house to live in. However, the number of people living in disorderly homes has been increasing. Two or three of every five hundreds houses may be categorized as "Gomiyashiki". Many young people neither organize nor clean their living spaces.

This study examined aspects of the actual living conditions of a study group of 554 university students, seeking to identify connections between student living conditions and family background or home economics education experience. The results indicate that, in terms of comparative frequency, students more frequently engage in room cleaning and proper separation of garbage. They are less likely to rearrange their rooms or do a thorough house cleaning. The analysis also revealed that those student living conditions examined in this study of could be predicted in varying degrees by student interest in home economics education, their home economics experience, and their family background. The students' behaviors appeared to be affected more strongly by their family background than by educational inputs. In addition, students' interest in and awareness of home economics were correlated to performance of certain basic housing behaviors. Fundamental knowledge of home economics appeared in particular to have a significant influence on male students' housing behaviors

KEY WORDS : living conditions, interest in home economics education, family background, home economics experience, university student

I Introduction

Japanese society is currently facing a housing problem referred to in Japanese as "Gomiyashiki" (Koinuma, 2009). A "Gomiyashiki" is a house which is filled with garbage, or being disorganized to a degree which significantly degrades livability. The spread of these conditions directly concerns home economics education in general, and particularly primary and secondary level home economics education. It is mandatoryfor all students in Japan to receivehome economics education at least for six years, starting from the 5th grade. Through such compulsoryhome economics education, students acquirethe knowledge and skills for making a comfortable house to live in (Ministry of Education of Japanese Government, 2008a, 2008b, 2010). However, the number of people living in disorderly, disorganized, or garbage strewn houses has been increasing.Two or three of every five hundreds houses may be categorized as "Gomiyashiki". Many young people neither organize nor clean their rooms (Japan Broadcasting Corporation, 2009).

Nagaoka& Oka (2005) reportedthat junior high school students cannot manage their belongings, and that their class rooms are untidy. The reported conditions resulted in student restlessness in

their daily environment, and were observed to impair student ability to concentrate and study. Sato *et al*(1997a, 1997b)reported that somewhat more than 50% of university students living alone clean their rooms just once or twice a month, and that most students don't take adequate care of the cleanliness or freshness of their bedding.This was a portion of the basis for their conclusion that the students lived in an unclean environment. Kuromitsu *et al* (2011) reported only about 20% of university students are in the habit of cleaning their rooms. In addition, Sato *et al*(1997a, 1997b) further described measurable differences between male and female student housing behaviors. In general, female students engaged in cleaning and organizational housing behaviors more frequently.

However, a nationwide survey conducted by JAHEE (Japan Association of Home Economics Education, 2003), reported that Japanese children usually keep their rooms clean and in good order. Additionally, Zaitsu *et al*(2004) indicated that more university than elementary students had a high level of concern about the conditions of their house, and cleaned their room more frequently. They also indicated that university students engaged in basic housecleaning more frequently, though they engaged in rearranging their rooms and thorough housecleaning behaviors comparatively less frequently.

Data from these studies are conflicting and inconclusive regarding the actual living conditions of Japanese university students. It is important to clarify the actual living conditions of university students who have studied for eight years.

Moreover some researchers examined significant factors affecting the living conditions of university students. The research suggests that more than 60% of university students learned how to clean a room from their mothers, while more than 30% of them didn't learn it from anyone (Kuromitsu *et al*, 2011, Miyazaki*et al*, 2008).From these results, it seems obvious that family background likely influences the living conditions of university students, but it is uncertain to how great an extent it does so. Regarding the effects of home economics education, more than 80% of university students analyzed their domestic domain, but less than 50% of them were actually taught how to clean a room by their teachers. Sato *et al*(1996) assert strongly the necessity of housing education. The authors of this study seek to demonstrate that it is important to examine, both the degree and scope of those factors affecting the living conditions of university students from the standpoint of the family background and home economics education.

II Objectives

This study examined the actual living conditions of university students, and identified the connection between student's living conditions and their family background or home economics education experience. In addition, the authors discuss both lesson planning and pedagogical improvementin home economics education, and what role both may take in the future, in terms of impacting university students' living conditions.

III Methods

1. Research method

At the beginning of the study, the authors examinedthe existing living conditions of university students.Regarding the living conditions of university students,we examined whether they live safe, comfortable, and healthy lives, as defined by certain predetermined criteria. The study inquired into seven housing behaviors commonly represented in home economics textbooks and frequently expressed in daily life.

Following this initial stage, the authors identified four factors which have a significant, influential connection to the living conditions of university students. For the purposes of this paper, we propose to refer to these factors using the following terminology: "interest in home economics education", "family background", "home economics experience", and "gender distinction".

"Interest in home economics education" was measured by responses to four questions dealing with home economics lessons. The questions were designed to elicit responses measuring student enjoyment of the lesson, overall student engagement in family life, student motivation levels in applying practices learned in class and overall student evaluation of the usefulness of the lesson. In assessing "home economics experience", the authors used seven housing behaviors contained in the junior high school curriculum as a baseline. Additional inquiry was made into the background living conditions of university students. The seven questionnaire items about "family background" cover habits and customs in the students' family life. These questions include one question each about housing condition and manner of living, two about human relations, and three about housework. The authors also examined gender distinction, specifically whether or not there are significant differences between male and female student' living conditions.

2. Sample

The survey was conducted at Hokkaido University of Education in June of 2010. The sample consisted of 554 students, from freshmen to seniors, 272 males and 282 females. The authors distributed questionnaires to each person by hand and collected them again one week later.

3. Analysis

Regarding "living conditions", "interest in home economics education", and "family background", students were asked to select one of 5 possible answers, rating agreement with the questionnaire items on a percentage scale: '100~80% agreement', '80~60% agreement', '60~40% agreement', '40~20% agreement', and '20~0% agreement'. These 5 answers were given the values 5, 4, 3, 2, and 1, respectively. Regarding "home economics experience", students were asked to select one of 2 possible answers: 'experienced', and 'inexperienced'. These 2 answers were given the values 2, and 1, respectively. The collected data were analyzed by using Statistical Package for Social Science (SPSS), version 19.0. The mean was then taken of each item. Using a t-test of the mean, the authors examined differences in male and female students' frequency of engaging in domestic behaviors. In order to estimate the factor structure of the measurements, a factor analysis was conducted. In addition, Cronbach's alpha coefficient was applied to test the reliability of each scale. Pearson correlation analysis was used to examine a bi-variate relationship between two variables and to detect the presence of multicollinearity between two variables. Multiple regression analysis was employed to detect the relationship among the variables. Path analysis was used to estimate the causal relationships and magnitude of the linkages between variables.

IV Results and Discussion

1. The actual living conditions of university students

Table 1 displays the scale of the living conditions of university students. Exploratory factor analysis (principal factor squares, promax rotation) of the living conditions indicated two factors with eigenvalues of more than 1.0, explaining 58% of the total variance. All items have a factor loading of more than 0.4. Two factors were named "practical housing behavior" (factor 1), and "basic housing

Table 1 The scale of the living condition

Housing Behavior	Mean	SD	Factor loading		Common feature	α coefficient	Correlation coefficient
			I	II			
You keep a safe room	2.80	1.17	0.75	0.14	0.58		0.58
You rearrange your room as needed	2.53	1.19	0.73	0.17	0.56	0.72	0.59
You move furniture and other large items in the course of cleaning	2.64	1.30	0.50	0.33	0.35		0.47
You clean your own room	4.47	0.85	0.06	0.77	0.60		0.53
You properly ventilate your living space and manage room temperature	3.71	1.10	0.43	0.55	0.49	0.66	0.51
You separategarbage properly	4.10	1.09	0.15	0.46	0.23		0.36
You keep a comfortable room	3.96	1.08	0.25	0.40	0.23		0.38
Contribution rate (%)			41.46	16.49			

behavior" (factor 2). Correlation coefficients were from 0.47 to 0.59 for factor 1, and from 0.36 to 0.53 for factor 2. Cronbach's alpha coefficients were 0.72, and 0.66 for factors 1 and 2, respectively, which indicated adequate reliability of each scale.

Table 1 reveals that the means of all items in factor 2 are higher than those in factor 1. Many students frequently engage in basic housing behaviors such as 'you clean your own room' and 'you separategarbage properly'. However, the means of all items in factor 1 are lower than 3.0. In particular few students rearrange their rooms. They maintain their abodes in their own way. Therefore, it seems that most students clean and order their rooms in accord with personal standards.However, it is obvious that few students make significant effort in order live in a more comfortable, stylish and secure environment.

2. Interest in home economics education

Table 2 displays the means and the standard deviations of all four items. 'you take part in the practice positively (cooking, sewing, so on)' had the highest mean of all items within the category "interest in home economics education". The item 'you have integrated housing lessons into your life' possessed the lowest mean. Most students positively took part in the practice of cooking or sewing, and enjoyed home economics lessons, but merely half of students found the home economics lessons to be useful enough to apply.

The scale of interest in home economics education incorporates all four questionnaire items. As indicated in Table 2, correlation coefficient was from 0.66 to 0.79, and Cronbach's alpha coefficient was 0.77, which indicated adequate reliability of the scale.

3. Family background

Table 3 displays the means and the standard deviations of all seven items. "You talkwith

Table 2 The scale of the interest in home economics education

Measures of interest in home economics education	Mean	SD	α coefficient	Correlation coefficient
You have enjoyable lessons	3.66	0.98		0.67
You have studiedfamily life previously in the course of home economics education	3.47	0.95	0.77	0.66
You take part in the practice positively	4.09	1.00		0.73
You have integrated housing lesson intoyour life	2.94	0.95		0.79

Table 3   The scale of thefamily background

Family background items	Mean	SD	α coefficient	Correlation coefficient
The room is kept tidy	3.63	1.16		0.38
Your parents usually go to and out of bed at the same time everyday	3.28	1.33		0.34
You talk with your family everyday	4.03	1.26		0.43
Family members get on well with their neighbors	3.68	1.13	0.69	0.43
You help with the housework regularly	3.01	1.26		0.39
All members of the family cooperate doing housework	3.23	1.38		0.46
Father shares the housework	2.80	1.43		0.34

yourfamilyeveryday" was the highest mean of all items in the category "family background". The lowest mean value was for "father shares the housework". Most students talk with their family everyday, and family members generally get on well with their neighbors. However,fewer than half of students and their fathers share the housework regularly.

The scale for family background utilizes data from all seven questionnaire items. Table 3 shows that correlation coefficient was from 0.34 to 0.46. Cronbach's alpha coefficient was 0.69, which indicated adequate reliability of the scale.

4. Home economics experience

Table 4 displays the means and the standard deviations of all seven items. "You have studied the role of the dwelling in society"and "you have learned how to separate garbage and about garbage related environmental problems" had higher mean values than the other items in"home economics experience". The lowest mean was "you have studied places in need of frequent or extensive cleaning". Most students study household roles and garbage related environmental problems. However, few students study those areas of the house which require the most cleaning.

Assessing home economics experience influence on university student living conditions, most students learn how to separate garbage properly in home economics lessons and make use of the learning experience in their family life. Most students clean their own room properly, though none of the students learned how to clean a room in those classes. The correlation of home economics experience and the living conditions of university students does not appear close when measured using our data.

The scale of home economics experience contains data from all seven questionnaire items. As indicated in Table 4, the correlation coefficient was from 0.39 to 0.60. Cronbach's alpha coefficient was 0.78, which indicated adequate reliability of the scale.

Table 4   The scale of home economics experience

Items of home economics experience	Mean	SD	α coefficient	Correlation coefficient
You have studied the role of the dwelling in society	1.89	0.31		0.46
You have learned cleaning techniques appropriate to different areas of the house	1.62	0.49		0.51
You have studied the concept and creation of a comfortable housing environment	1.84	0.37	0.78	0.55
You have learned some methods by which to live a comfortable life	1.75	0.43		0.60
You have learned some methods to prevent home accident	1.65	0.48		0.56
You have learned how to separate garbage and about garbage related environmental problems	1.89	0.31		0.39
You have studied places in need of frequent or extensive cleaning	1.49	0.50		0.53

Table 5   The difference in male and female's frequency of housing behaviors

Items of housing behavior	Male student		Female student		t-rate
	Mean	SD	Mean	SD	
You keep a safe room	2.86	1.18	2.75	1.16	1.05
You rearrange your room as needed	2.49	1.18	2.56	1.20	-0.63
You move furniture and other large items in the course of cleaning	2.65	1.29	2.62	1.31	0.27
You clean your own room	4.39	0.91	4.54	0.77	-2.08*
You properly ventilate your living space and manage room temperature	3.74	1.04	3.68	1.17	0.70
You separategarbage properly	3.97	1.17	4.22	1.00	-2.74**
You keep a comfortable room	3.97	1.04	3.95	1.11	0.22

*$p<0.05$, **$p<0.01$

Table 6   The difference in male and femalemeans and SD

Scale	Male student		Female student		t-rate
	Mean	SD	Mean	SD	
Basic housing behavior	4.02	0.74	4.10	0.71	-1.28
Practical housing behavior	2.67	0.99	2.64	0.97	0.29
Interest in home economics education	3.43	0.79	3.65	0.68	-3.46***
Home economics experience	1.74	0.28	1.73	0.27	0.16
Family background	3.33	0.71	3.43	0.79	-1.66

***$p<0.001$

5. The difference in male and female's frequency of housing behaviors

In order to examine the difference between male and female's frequency of housecleaning behaviors, we conducted a t-test of the mean, using gender as an independent variable.

Table 5 displays differences in male and female's frequency assessed behaviors. In cases in which the t-rate was positive, the males engaged in the housing behavior more frequently than the females did. Ift-rate was negative, the females engaged in the behavior more frequently than the males did. Two significant differences in male and female's frequency of housing behavior appeared. Female students engaged in "you clean your own room" and "you separate garbage properly" in the basic housing behaviors more frequently than male students. However, there was no significant difference in the housing behaviors assigned to the 'practical' category.

Table 6 displays differences in male and female cohort scalar means. Female students had a higher interest in home economics education than male students. From these results, some differences in male and female's housing conditions were evident, but they were not great differences.

6. Correlation matrix of all scales divided into male and female cohorts

A correlation matrix of all scales, divided between male and female student cohorts is presented in Table 7. In the case of male students, there were positive correlations of "basic housing behavior" with "practical housing behavior", "interest in home economics education", and "family background". In particular, the correlation coefficient between "basic housing behavior" and "practical housing behavior" was high, i.e., the correlation was close. In contrast, there was no correlation between "basic housing behavior" and "home economics experience". There were positive correlations of "practical housing behavior" with all remaining four scales. Additionally, there were positive correlations between "interest in home economics education" and "family background", and "home economics experience" and "family background".

Regarding "basic housing behavior", the results of female students were the same as those of males. However, there was no correlation between "practical housing behavior" and "interest in home

Table 7   The correlation matrix of all scales divided into male and female student cohorts

	Basic housing behavior	Practical housing behavior	Interest in home economics education	Home economics experience	Family background
Basic housing behavior	0.54**	0.21**	0.10	0.44**	
Practical housing behavior	0.40**		0.11	0.12*	0.31**
Interestin home economics education	0.25**	0.19**		0.16**	0.17**
Home economics experience	0.06	0.15*	0.09		0.09
Family background	0.34**	0.19**	0.28**	0.13*	

*p<0.05, **p<0.01 Upper right : Female, Lower left : Male

economics education". Also though there were positive correlations of "interest in home economics education" with "home economics experience" and "family background", there was no correlation between "home economics experience" and "family background". It is expected the differences in male and female students are attributable to different degrees of awareness, as well as different perceptions, of their housing conditions.

7. Students' awareness and perception of housing conditions

In order to examine how home economics education and student family background affect the actual living conditions of university students, the authors conducted a multiple regression analysis dividing male and female students cohorts according to "practical housing behavior", "interest in home economics education", "home economics experience", and "family background" as independent variable, and "basic housing behavior" as dependent variable. In addition, multiple regression analysis of gender segregated cohorts was performed, using "basic housing behavior", "interest in home economics education", "home economics experience", and "family background" as independent variables, and "practical housing behavior" as a dependent variable. These results are displayed in Table 8 and Table 9.

As indicated in Table 8, "practical housing behavior"(male:β=0.34, $p<0.001$, female:β=0.44, $p<0.001$), "interest in home economics education"(male:β=0.12, $p<0.05$, female:β=0.12, $p<0.05$), and "family background"(male:β=0.24, $p<0.001$, female:β=0.28, $p<0.001$) had significant and positive influences on "basic housing behavior" in both male and female students. However, "home economics experience" had no significant influence on "basic housing behavior" in either male or female students.

Table 9 shows that "basic housing behavior"(male:β=0.34, $p<0.001$, female:β=0.44, $p<0.001$) had significant and positive influences on "practical housing behavior" in both male and female students. Besides, in male students cases alone, "home economics experience" (male:β=0.12, $p<0.05$) had significant and positive influences on "practical housing behavior". However, "interest

Table 8   The multiple regression analysisbetween "basic housing behavior" and the other scales divided into male and female student cohorts

	Basic housing behavior					
	Male student			Female student		
	B	SE B	β	B	SE B	β
Practical housing behavior	0.25	0.04	0.34***	0.33	0.04	0.44***
Interest in home economics education	0.12	0.05	0.12*	0.12	0.05	0.12*
Home economics experience	-0.09	0.14	-0.03	-0.01	0.13	-0.003
Family background	0.25	0.06	0.24***	0.25	0.05	0.28***
R^2		0.25***			0.39***	

***p<0.001, *p<0.05 β:partial regression coefficient

Table 9   The multiple regression analysisbetween "practical housing behavior" and the other scales divided into male and female student cohorts

| | Practical housing behavior | | | | | |
| | Male student | | | Female student | | |
	B	SE B	β	B	SE B	β
Basic housing behavior	0.49	0.08	0.34***	0.68	0.08	0.44***
Interest in home economics education	0.10	0.07	0.08	-0.04	0.07	-0.03
Home economics experience	0.42	0.20	0.12*	0.26	0.18	0.07
Family background	0.04	0.08	0.03	0.11	0.07	0.09
R^2		0.18***			0.31***	

***p<0.001, *p<0.05

Table 10   The multiple regression analysisbetween "Interest in home economics education" and the other scales divided into male and female student cohorts

| | Interest in home economics education | | | | | |
| | Male student | | | Female student | | |
	B	SE B	β	B	SE B	β
Home economics experience	0.14	0.17	0.05	0.37	0.15	0.15*
Family background	0.30	0.07	0.27***	0.14	0.05	0.16**
R^2		0.08***			0.05**	

***p<0.001, **p<0.01, *p<0.05

Table 11   The multiple regression analysisbetween "Family background " and the other scales divided into male and female student cohorts

| | Family background | | | | | |
| | Male student | | | Female student | | |
	B	SE B	β	B	SE B	β
Home economics experience	0.27	0.15	0.11	0.18	0.17	0.06
Interest in home economics education	0.24	0.05	0.27***	0.19	0.07	0.16**
R^2		0.09***			0.03**	

*p<0.05

in home economics education" and "family background" had no significant influence on "practical housing behavior" in either male or female students.

Furthermore, the authors conducted a multiple regression analysis of male and female student cohorts using "home economics experience" and "family background" as independent variables, and "interest in home economics education" as a dependent variable. As indicated in Table 10, "family background"(male:β=0.27, $p<0.001$, female:β=0.16, $p<0.01$) had significant and positive influences on "interest in home economics education" in both male and female students. "Home economics experience"(female:β=0.15, $p<0.05$) had significant and positive influences on "interest in home economics education" in only female students.

Finally, the authors conducted a multiple regression analysis of male and female student cohorts using "home economics experience" and "interest in home economics education" as independent variables, and "family background" as a dependent variable. Table 11 shows that "interest in home economics education"(male:β=0.27, $p<0.001$, female:β=0.16, $p<0.01$) had significant and positive influences on "family background" in both male and female students. However, "Home economics experience" had no significant influence on "family background" in either male or female students.
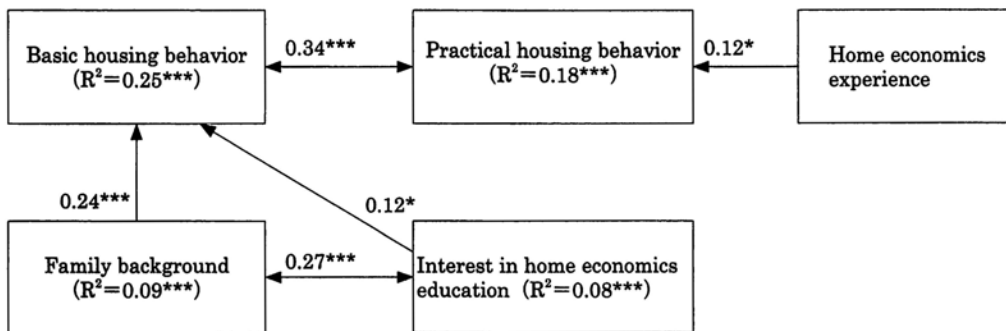
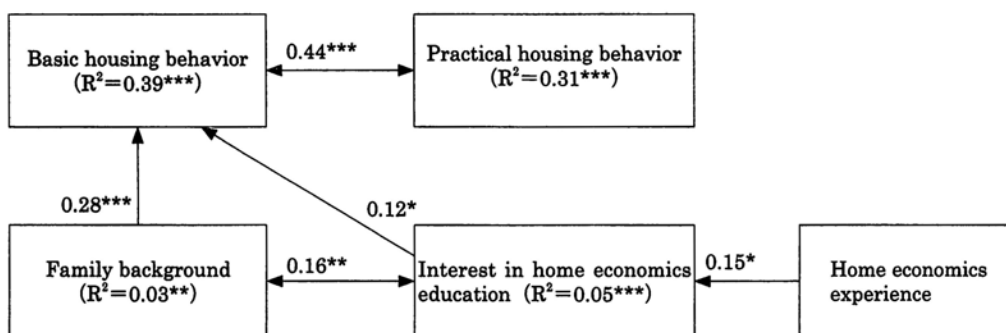Figure 1 A path diagram of male students' living condition

Figure 2 The path diagram of female students' living condition

From the results of the multiple regression analysis, path diagrams of the university students' living conditions were created in Figure 1 and Figure 2. In both male and female students, Fig.1 and Fig.2 show the significant mutual relation between basic and practical housing behaviors. Additionally, "interest in home economics education" and "family background" had significant influence on "basic housing behaviors". The effect from "family background" was greater than from "interest in home economics education". That is to say, while "interest in home economics education" is reciprocally related to "family background", both factors positively influencing the basic behaviors of university students. It is obvious that the students have an interest in home economics education, regularly help with housework on a frequent basis, talk with their family, and live in the comfortable housing environment, as well as frequently engaging in basic housing behaviors such as cleaning their own room and separating the garbage properly.

However, regarding "practical housing behaviors", different path diagrams between male and female students are derived from the data. In male students, "home economics experience" has a direct influence on "practical housing behaviors". On the other hand, in female students, all the rest of three factors have only indirect influences on "practical housing behaviors". "Home economics experience" doesn't exert an important effect on the housing behaviors of female students.

V Conclusions

This study examined the actual living conditions of university students, and identified the connection between those living conditions and the student's interest in home economics education,

family background or home economics education experience. The results of the survey are as follows.

The living conditions of university students were classified into basic and practical housing behaviors. Basic housing behavior consists of cleaning one's own room, separating the garbage properly, etc. Many students engaged in such basic housing behaviors. Therefore, it would seem reasonable to conclude that only a few students live in conditions similar to those referred to as "Gomiyashiki". However, students engaging in practical housing behaviors such as keeping a safe house and rearranging their rooms were in the minority. Most students live in their comfortable rooms, and don't go out of their way to effect a more comfortable, stylish and secure environment.

Interest in home economics education as well as student family background had significant influences on basic housing behavior. The effect from the family background was greater than from the interest in home economics education. The students regularly helped with housework talked with their family, and lived in the tidy rooms, frequently engaging in basic housing behaviors such as cleaning their own room and separating the garbage properly.

Regarding practical housing behavior, the data supports the conclusion that it was directly influenced by home economics experience in male students. On the other hand, in female students, it was indirectly influenced. Home economics experience didn't exert an important effect on the housing behaviors of female students.

What can be done to encourage the students to take a more proactive role in improving their housing conditions? The authors believe that a clue may be found in the path diagrams of the students' living conditions in this research. There were significant, mutual relationships between basic and practical housing behaviors. The more frequently students engaged in basic housing behaviors, the more frequently they would likewise engage in practical housing behaviors. In addition, interest in home economics education had a direct influence on basic housing behaviors. If enjoyable, useful lessons can be created for the students, the living conditions of university students can be expected to improve.More specifically, enjoyable and useful lessons are more effective in improving living conditions for female than male students.

On the other hand, as home economics experience directly affected the practical housing behaviors of male students, they may derive greater benefit from lessons containing knowledge and skills designed to encourage students to improve their housing conditions, such as lessons which teachcleaning techniques, methods to prevent home accident,garbage separation, so on.These approaches in concert may realistically be expected to strongly influence their domestic lives.

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